

## **Indonesian experiences with EM**

A progressive farmer in Pansacari, Bali, Indonesia, Mr. Madasuwestika, started strawberry cultivation a few years ago conventionally, using chemical fertilizers and pesticides. However due to problems of soil fertility, the yields were low and thus he was not making a profit. Time was fast passing by, and in 2007, he had an eventful encounter with the sales team of Indonesia Kyusei Nature Farming Society (IKNFS)! They explained the benefit of EM technology™. As he was a rational farmer, he understood the concepts of Nature farming and thus began using EM for his strawberries. The process he adopted is as follows:

He completely stopped using all chemicals on his farm, and began adding EM compost (EM Kotaku – i.e. Bokashi) at a rate of 1.5 Mt per 0.1 ha) to improve soil quality. Activated EM was sprayed to plants at a dilution of 1: 1000 at watering by a hand held garden hose. In addition, once in every three days, EMFPE (EM Plant fermented Extract) was applied at a dilution of 1:1000.

Within a few weeks, he observed healthy regrowth of his plants, with glossy green leaves and the yields increased. The costs were lower due to the non-purchase of chemicals and hence the family could improve their standards of living.

### **Brahmavihara-Arama Temple**

This was the first Buddhist temple established in Bali, Indonesia. The temple has a farm of 2 ha, where ornamental plants and vegetables are grown EM and EM compost (named Bokashi kotaku). EM technology was introduced to this farm in 1999. The farm uses 5 Mt of bokashi per month and EM activated solution is used during irrigation. Due to EM technology, the soil is soft and does not require chemicals and pesticides. The maintenance costs are lower and the farm is very successful.

### **Alam kul (hotel, sewage treatment)**

Alam kulkul Boutique Resort & Hotel, Bali – a four star Boutique Resort has been using EM for their sewage treatment and maintaining the ornamental plants around the hotel since 2005.

They have a simple process where 10L of EM Activated Solution is added into the waste water system of the kitchen and the sewage system. In addition, 50L is added to the drains around the hotel at cleaning time on a daily basis. The plants are irrigated with EM activated solution. The dilution used in all these operations is between 1: 500 – 1000.

The impact of EM is very clear as the foul odors are virtually non-existent, and the plants do not have pest and disease problems. The Hotel management stated that the problems of blockage in the grease traps are reduced significantly, although they could not observe a total degradation. Thus, they combine EM with their aeration and

filtering processes to derive optimum benefits. The benefits of treating waste water and sewage systems in Indonesia is best depicted by the graph, which clearly presents the reduction of COD,SOD,SS, NH<sub>3</sub>,NO<sub>2</sub>,NO<sub>3</sub>.

In Indonesia, over 30 hotels use EM for their sewage treatments. A majority of these projects are maintained by the team of Pak Oles. (Wididana san' s team)



The strawberry farm



The strawberries.



The fame which is in the  
Brahmavihara-Arama  
temple.



Ornamental plants  
(Brahmavihara-Arama)



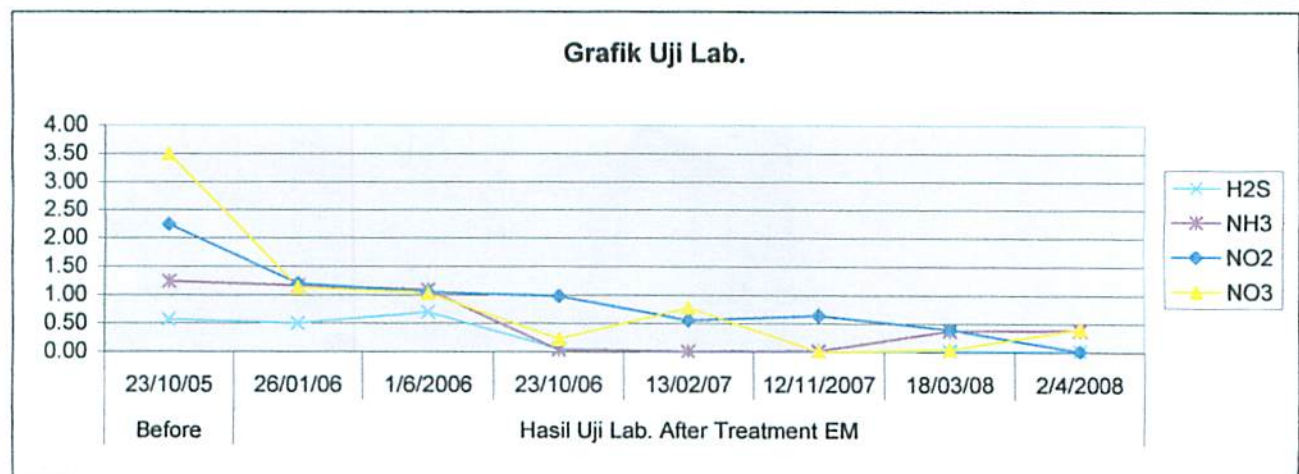
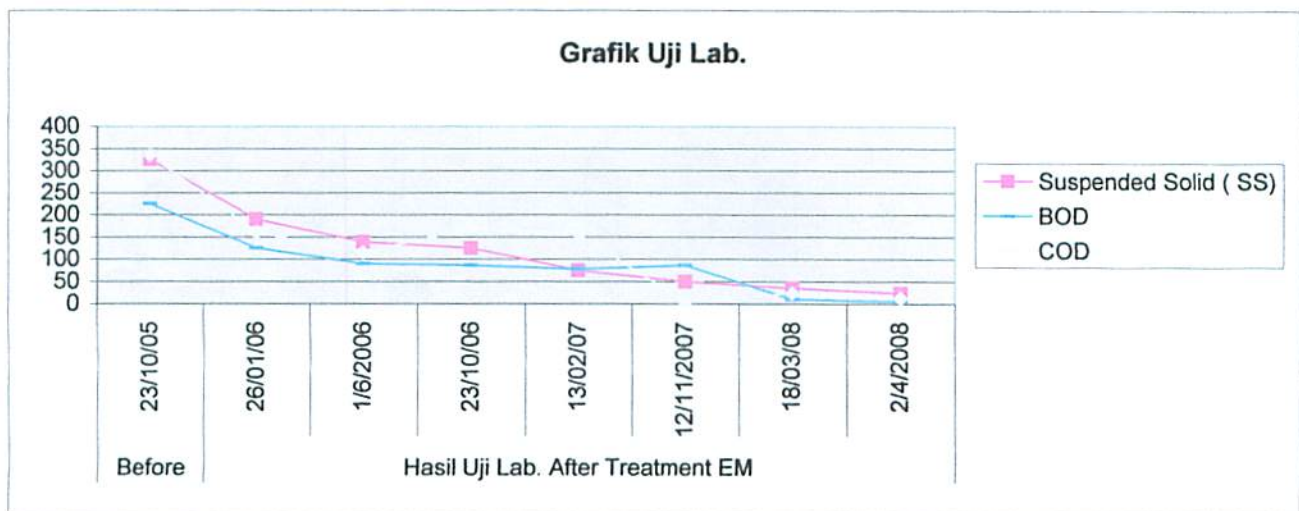
Alam kul kul  
A picture of septic tank

**Profile Costumer**

Nama Alam Kul - kul hotel  
 Kapasitas STP 60 M<sup>3</sup>/day  
 Model STP Bio System  
 Model Aplikasi EM Inokulasi EM aktif setiap hari dengan konsentrasi 1 : 1 : 20  
 Kebutuhan EM aktif /hari/b 40 liter/hari / 1.200 liter/bulan

**HASIL UJI LAB. ALAM KUL - KUL**

Paramater	Before	Hasil Uji Lab. After Treatment EM						
	23/10/05	26/01/06	1/6/2006	23/10/06	13/02/07	12/11/2007	18/03/08	2/4/2008
<b>Fisika</b>								
Suspended Solid ( SS)	325.00	190.00	138.81	125.00	75.00	50.00	35.00	24.00
<b>Kimia</b>								
pH	7.00	7.20	7.60	6.80	6.80	7.34	8.03	7.50
H2S	0.57	0.50	0.70	0.05	0.01	0.01	0.02	0.02
NH3	1.24	1.16	1.09	0.03	0.01	0.02	0.38	0.39
NO2	2.24	1.20	1.05	0.98	0.56	0.64	0.40	0.01
NO3	3.50	1.13	1.03	0.23	0.78	0.01	0.05	0.41
BOD	225.00	125.00	90.00	86.00	78.00	86.00	10.12	5.39
COD	335.00	160.00	115.00	170.00	156.00	2.97	24.00	12.17



**Kesimpulan :**

1. EM4 tidak berpengaruh terhadap pH air limbah.
2. Treatment of EM4 menurunkan COD, BOD dan SS air limbah.
3. Treatment EM4 paling efektif menurunkan SS.
4. Aplikasi EM-4 secara terus menerus dapat mengurangi biaya operasional / pemeliharaan
5. Pemakaian EM-4 secara terus menerus dapat meningkatkan kualitas air limbah.

Nepal Dairy 19, September, 2008/10/08

Nepal Dairy is a company, located in Kathmandu, Nepal., specializing in dairy products. They produce milk-based products such as ice cream, cheese, and butter from 10,000 L of milk per month. In the earlier times, the hygiene of the factory was very poor due to the foul odor from drains and ditches taking away the wastewaters.

Mr. Deelak Sing, the key person of the company contacted Mr. S.P.Yadav the EM distributor in Nepal to overcome this problem. They began by spraying EM around the factory, and with time intensified the operations. The use of EM did wonders and as usual, the foul odors were reduced especially in the summer (July and September) when the temperatures are high. Due to the success achieved the factory now makes their own activated EM and spray the whole factory at a dilution of:1000. The total amount of EM used is 10-15L per a day, and the success is phenomenal. The dairy factory which began using EM 5,6 months ago and due to the success they are confident and hence we are sure that this progressive unit will have greater successes and be an eye opener for other similar food processing units around the Himalayan Kingdom.



Drop EM from the ditch.



Contact- Jun Matsumoto, APNAN

Mr.Somadasa Lankathilaka (Vegetable and rice cultivation) in Sri Lanka

His farmland is located in the north of Colombo in Sri Lanka. (1 hour distance by car) His land consists of 1.5 acre of rice fields and 1.5 acre of upland fields. He has been doing organic farming using KNF & EM technology since 1998. During this time, the Sekai Kyusei Kyo in Sri Lanka introduced the technology and he is still doing organic farming without any chemical fertilizers and pesticides.

The methodology used on his organic farming is given below:

1. Before planting or seeding, he sprays diluted EM5 over the soil. This reduces weed seeds.
2. Thereafter, he applies EM bokashi to the soil (40kg per 1 acre) He learned the way of making EM bokashi from former APNAN staff and referred APNAN manuals!! The type of bokashi is aerobic bokashi.)
3. After planting, he sprays EM5 or EMFPE at intervals of 10 days. (Dilution ratio depends on the growing stages, type of plants, and condition of the weather, climate, and even the spices!! But basically EM5 : water = 1 : 1000 (after planting 0-30days), EM5 : water = 1 : 500(after planting from 30days),
4. If pest and disease problems occur, in spite of the spraying EM materials, he makes EM5 with large quantities of neem and molasses. This solution is very bitter and suppresses the pests very effectively.

This is the basic cultivation method used by him. The important point is to make EM related materials such as EM5, EMAS and EM bokashi very carefully, and the water content in Bokashi is vital factor. EM5 needs to be made with large amounts of neem and molasses to suppress the pests. He respects nature that is giving him many crops and does organic farming according to the laws of nature.

The farmer has a very observant eye for farming and notices any small differences in his field.

At the beginning he had to struggle to develop an organic farm because there were many weeds, pests and contaminated soils. With time he succeeded and today he does organic farming very easily. He uses only a small amount of EM1 for maintaining everything, as the soil is enriched with beneficial microbes and weed problems have been eliminated.

The farmers states that the benefits of organic farming is that yields increase with time, the costs decline, the crops have a longer shelf life and very importantly, they are tasty.

Thus, the food he makes is very popular among the locals and many buy his products. The string beans he gave me were very fresh and tasty – the tastiest I have had!!



EM green vegetables from Hanoi.

A vegetable farmer who attended a Nature Farming and EM workshop conducted by the Vina Nichi center began using the technology in 2003. The chemical fertilizers being used were mixed with chicken manure and fermented with EM, and added to soil before planting. . In addition, EMAS is applied at 5 day intervals until harvests. The leafy vegetables are luscious and green, the yields have increased and the incidence of pests and diseases reduced. The secret – the farmer say is using EM on a regular basis.



The owner uses EM technology after she attend Vietnamese Saraburi Tour to get the knowleage of EM and KNF.



Korl ravi are very vivid color. She tried to decrease using number of chemicals year by year.

Contact Koki Nagamine APNAN or Vina Nichi Center, Hanoi.

## Flower production with EM

A vegetable farmer in the Vietnam Dong anh district near Hanoi, Vietnam, shifted her operation to an organic flower farm in 2005. The information she received from the Vina Nichi Center in Hanoi, induced her to make this change, and now she grows flowers on a 07 ha farm.

The mode of using EM by this grower is as follows: A mixture of 3% EMAS and 3% molasses is added to a tank with 200 l of soybean liquid (prepared by mixing mashed soybeans with water). This liquid is applied to the soil until planting and thereafter at two week intervals. The flower stalks grow taller and colors brighter and the harvest of 200 – 300 stalks per day is sold at the Hanoi Airport and also used in decorations. The use of EM has removed offensive odors in the flower gardens.



Beautiful Organic EM flowers.



The owner provide the 200-300 stalks to the airport every days. There were so many flowers in the farm.

Contact Koki Nagamine APNAN or Vina Nichi Center, Hanoi.



## A. Authaya, Thailand

A group of livestock farmers in Authaya, led by Mr. Pechaburi, learnt of EM in May 2005 from Mr. Kanit Muangnil of Sara Buri Nature Farming Training Center. They raise some 800 mother pigs with 1000 piglets and produce biogas.

They use EMAS as a spray to pigs (dilution 1:200 – 1000), add to drinking water (EMAS 1:200 – 1000) and make EM rice rinse water as they have sufficient wash water from rice.

The result has been exceptional – The smells of the pig pens have reduced significantly with no complaints from neighbors, costs have reduced as they do not use drugs or antibiotics after the inception of EM application (cost reduction of some 2000 US dollars per month), decline in mortality, costs of veterinarians lowered and profits have increased. They also obtain biogas for on farm use.

**Contact – Jun Matsumoto or Koki Nagamine, APNAN**



The lady adds EMAS into the storage tank holding drinking water for pigs

Generally, the addition of EMAS to drinking water is not recommended as the quality of the EMAS could vary. If poor quality EM is added, the inclusion of harmful microbes may cause problems. In such situations the addition of EM in its pure form is recommended.



The piglets receive EM drinking water and some EM spray to suppress foul odor.

## CASE STUDIES WITH NATURE FARMING AND EM TECHNOLOGY

### Waste water treatment

#### A. Samuthprakarn, Thailand

The Pala Assets Co Ltd in Muang Samuthprakarn, managed by Ms Natawan Ehoitheerah has been using EM for 5 years to treat water from their tanneries. EMAS is added to the first of four waste water holding tanks and EM is sprayed onto machines to reduce smells.

The benefits accrued include reduced costs (from 50 – 80000 THB per month to 10,000 THB) and lower smell. The wastewater is sprayed to the forest and trees grow well.

Contact – Yujiro Sano, APNAN



There is no foul odor in the even in the first tank as they use EM in the factory.



EMAS is applied daily to reduce the bad smell and improve water quality.

The owners succeed in cutting down on expenses by EM technology. EM cost is cheaper and safer than chemical treatment.